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SUMMARY OF SAFETY AND EFFECTIVENESS

SUBMITTED BY:

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K963036

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NAME OF DEVICE:

Trade Name:	Mueller Hinton II Broth (Cation-Adjusted) with Lysed Horse Blood Catalog Number 4320500
Common Name/Description:	Antimicrobial Susceptibility Culture Medium
Classification Name:	Culture Medium for Antimicrobial Susceptibility Tests

PREDICATE DEVICE:	AB Biodisk Etest® for Susceptibility Testing of Pneumococci (K913459)
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DEVICE DESCRIPTION:

INTENDED USE: Mueller Hinton II Broth (Cation-Adjusted) with Lysed Horse Blood (MHLHB) is intended for use in broth dilution antimicrobial susceptibility testing of *Streptococcus pneumoniae* with 11 antimicrobial agents; i.e., cefaclor, cefotaxime, ceftriaxone, cefuroxime, chloramphenicol, erythromycin, imipenem, penicillin, tetracycline, trimethoprim/sulfamethoxazole, and vancomycin, according to the protocol described in the Approved Standard M7-A3, "Methods for Dilution Antimicrobial Susceptibility Tests for Bacteria that Grow Aerobically - Third Edition", dated 12/93, published by the National Committee for Clinical Laboratory Standards (NCCLS).

INDICATIONS FOR USE: Use of BBL® Mueller Hinton II Broth (Cation-Adjusted) with Lysed Horse Blood is indicated when *Streptococcus pneumoniae* has been isolated in pure culture in the clinical laboratory, and a

determination is desired as to whether the organism is susceptible, intermediate, or resistant to selected antimicrobial agents. In cases such as these, broth dilution antimicrobial susceptibility testing may be performed on BBL® Mueller Hinton II Broth (Cation-Adjusted) with Lysed Horse Blood, using cefaclor, cefotaxime, ceftriaxone, cefuroxime, chloramphenicol, erythromycin, imipenem, penicillin, tetracycline, trimethoprim/sulfamethoxazole, and vancomycin.

PRODUCT DESCRIPTION:

The development of laboratory tests to determine the activity of antimicrobial agents has paralleled the development of these agents. Fleming used a serial dilution technique to measure the lowest concentration of penicillin that prevented growth of a test organisms in broth. Ericsson and Sherris have published an excellent review of the various methods for susceptibility testing and the relationship of dilution and diffusion methods.

Broth dilution antimicrobial susceptibility tests (AST) are performed by inoculating serial dilutions (usually 2-fold) of the drug in a suitable liquid medium. The test may be performed in tubes (macrodilution), usually in 1.0 ml volumes, or in microtiter trays in volumes of 0.05 to 0.1 ml. Following incubation, the tubes or wells are examined for the presence of growth (turbidity or pellet). The lowest concentration of an antimicrobial agent at which no visible growth occurs is defined as the minimal inhibitory concentration, or MIC.

The rationale for an MIC susceptibility test rather than the disc diffusion test is that it gives quantitative information. It allows the clinician to correlate the amount of antimicrobial agent required to inhibit the growth of an organism *in vitro* and the achievable concentrations in the blood, urine, cerebrospinal fluid or bile. Effective antimicrobial therapy, however, also depends on other factors.

Broth dilution ASTs are usually performed in cation-adjusted Mueller Hinton Broth (CAMHB). However, this medium is not satisfactory for fastidious organisms such as *S. pneumoniae*. CAMHB supplemented with 2 to 5% lysed horse blood is the medium recommended for susceptibility testing of *S. pneumoniae*.

Interpretive criteria for the antimicrobial susceptibility testing of *S. pneumoniae* are provided in the NCCLS Standard, M7-A3. This document and NCCLS Informational Supplement M100-S6 should be consulted for further details.

PERFORMANCE DATA:

Antimicrobial broth dilution susceptibility testing using the quality control strain recommended by NCCLS Document M7-A3, *Streptococcus pneumoniae* ATCC 49619, was performed in-house with cefaclor, cefotaxime, ceftriaxone, cefuroxime, chloramphenicol, erythromycin, imipenem, penicillin, tetracycline, trimethoprim/sulfamethoxazole, and vancomycin. Following the test procedures described in M7-A3, twenty tests with the quality control strain and microtitre panels containing the eleven antimicrobics were performed over a period of ten test days. For all eleven antimicrobics, 100% (220/220) of the MIC's fell within the expected MIC ranges published in Table 3C of NCCLS Supplement M100-S6. The standard deviation for all antimicrobics was less than 1 $\mu\text{g/ml}$.

Reproducibility studies (3x/day for 3 days) were done at two field sites with the antimicrobics listed above against *S. pneumoniae* ATCC 49619 and nine (9) additional well-characterized *S. pneumoniae* strains. MIC interpretive standards from Table 2C of NCCLS Supplement M100-S6 were followed for each antimicrobial. Testing with cefaclor, cefotaxime, ceftriaxone, cefuroxime, chloramphenicol, erythromycin, imipenem, penicillin, and vancomycin resulted in 100% Essential Agreement with the NCCLS reference method. Testing with tetracycline and trimethoprim/sulfamethoxazole resulted in 99% and 98% Essential Agreement respectively with the reference method.